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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,511	07/11/2003	Per Bjoerkman	4441-A-31	6599

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EXAMINER
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KJM, PAUL D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/618,511

Applicant(s)

BJOERKMAN ET AL.

Examiner

Paul D. Kim

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26 and 32-49 is/are pending in the application.
- 4a) Of the above claim(s) 40-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26, 32, 35, 39 and 44-48 is/are rejected.
- 7) ☒ Claim(s) 33,34,36-38 and 49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This office action is a response to the election of species filed on 1/30/2006.

#### ***Response to the Restriction Requirement***

1. Applicant's election of Species A, claim 39, in the reply filed on 1/30/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 40-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/30/2006.

#### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "an electrically conductive surface (7) on the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate" as recited in lines 5-6 of claim 32. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

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is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The phrase "sealing a connecting port (5) about the opening in the second Al<sub>2</sub>O<sub>3</sub> housing plate" as recited in lines 10-11 of claim 32 does not disclose in the specification.

### ***Claim Objections***

5. Claims 34, 37 and 38 are objected to because of the following informalities:

Re. Claim 34: The phrase "ribbon-shaped  $\text{Al}_2\text{O}_3$  green body" as recited in line 2 and line 3 of claim 34 needs to be change to -- $\text{Al}_2\text{O}_3$  green body--, since there is no specific shape for the  $\text{Al}_2\text{O}_3$  green body in the disclosure.

Re. Claim 37: According to the amended specification filed on 9/30/2005, examiner suggests changing the phrases "pumping down reference vacuum chamber (25) to evacuate matter therefrom" as recited in line 4 and "to further lower the pressure within reference vacuum chamber (25)" as recited in line 5 to --evacuating the reference vacuum chamber (25)-- and --within reference vacuum chamber (25)--.

Re. Claim 38: According to the amended specification filed on 9/30/2005, examiner suggests changing the phrases "applying a vacuum to getter opening (13/14) to pump down the reference vacuum chamber (25)" as recited in lines 2-3 to --applying a vacuum pump to the reference vacuum chamber (25)--.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 39 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase "heating the  $\text{Al}_2\text{O}_3$  membrane and the

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first and second  $\text{Al}_2\text{O}_3$  housing plates to a temperature above 330 degrees Centigrade” as recited in line 7-8 was not described in the specification as originally filed and appears to be new matter. According to the specification, the glass seals are baked at several 100 °C, preferably 630 °C as described in lines 3-4 on page 9. Heating the  $\text{Al}_2\text{O}_3$  membrane and the first and second  $\text{Al}_2\text{O}_3$  housing plates to the temperature above 330 degrees Centigrade is not the same as baked the glass seals at several 100 °C, preferably 630 °C.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 26, 32, 35, 44, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tack (GB 2124770 A) in view of Takeuchi et al. (US PAT. 6,049,158).

Figs. 1 and 3 of Tack teaches a process of making a vacuum measuring cell comprising steps of: a. manufacturing a first  $\text{Al}_2\text{O}_3$  housing plate (1, an upper plate) with outer and inner opposing surfaces and an outer periphery; forming an electrically conductive surface (1d as shown in Fig. 3) on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to provide a first electrode of capacitive vacuum measuring cell; manufacturing a second  $\text{Al}_2\text{O}_3$  housing plate (1, a lower plate) with an outer periphery; forming an

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opening (opening of item 2) in the second  $\text{Al}_2\text{O}_3$  housing plate extending therethrough; sealing a connecting port (2) about the opening formed in the second  $\text{Al}_2\text{O}_3$  housing plate; manufacturing of an  $\text{Al}_2\text{O}_3$  membrane (4) having first and second opening surfaces and an outer periphery; forming an electrically conductive surface (broken line) on the surface of the  $\text{Al}_2\text{O}_3$  membrane to provide a second electrode of the capacitive vacuum measuring cell; disposing the  $\text{Al}_2\text{O}_3$  membrane between the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate with the first surface of the  $\text{Al}_2\text{O}_3$  membrane facing the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate and spacing the first surface of the  $\text{Al}_2\text{O}_3$  membrane at a predetermined distance from the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate to define reference vacuum chamber (C) therebetween, and spacing the second  $\text{Al}_2\text{O}_3$  housing plate at a predetermined distance from the second surface of the  $\text{Al}_2\text{O}_3$  membrane to define measurement vacuum chamber (opposing to C) therebetween; and sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate to form a vacuum tight seal therebetween (see also col. 1, line 43 to col. 2, line 93).

Tack also teaches that when a thickness of the diaphragm is at its lowest limit, the sensitivity is greatest. When testing is performed for the sensitivity of transducers of Tack, the given pressure is 2500 Pa (18.75 Torr). According to the typical membrane thickness as described in the specification (lines 8-14 on page 4), the lowest limit of the diaphragm thickness with the pressure of 2500 Pa (18.75 Torr) maybe fall into the range (10  $\text{m}\mu$  to 250  $\text{m}\mu$ ) as recited in the claimed invention. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to

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modify a diaphragm thickness of Tack by the diaphragm thickness with the pressure of 2500 Pa (18.75 Torr) within the range of 10 m $\mu$  to 250 m $\mu$  in order to increase the sensitivity.

Alternatively, if applicant does not agree with the examiner, Takeuchi et al. teach a making a sensor to detect bending, deflection or flexure for an electrical device such as transducer having a diaphragm made of ceramic having a thickness of 50 m $\mu$  or less (as per claims 32 and 44) and a grain size not higher than 5 m $\mu$  (as per claims 47 and 48) in order to assure sufficiently high mechanical strength for the diaphragm (see also col. 6, lines 12-20). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a thickness and a grain size of the diaphragm of Tack by a thickness and a grain size of the diaphragm as taught by Takeuchi et al. in order to assure sufficiently high mechanical strength for the diaphragm.

As per claim 26 the Al<sub>2</sub>O<sub>3</sub> membrane formed from an Al<sub>2</sub>O<sub>3</sub> slurry is old and well know in the art of manufacturing for the Al<sub>2</sub>O<sub>3</sub> membrane.

As per claim 35 Tack also teaches that a first electrical vacuum-tight feedthrough (3) through the first Al<sub>2</sub>O<sub>3</sub> housing plate, and coupling the first electrical vacuum-tight feedthrough to the electrically conductive surface (1d as shown in Fig. 3) formed on the inner surface of the first Al<sub>2</sub>O<sub>3</sub> housing plate to effect electrical coupling thereto as shown in Figs. 1 and 3.



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10. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tack in view of Takeuchi et al., and further in view of Hsieh (US PAT. 5,553,502).

Tack, modified by Takeuchi et al., teaches all of the limitations as set forth above except a diameter of the membrane. Hsieh teaches a process of making a pressure sensor having a diaphragm with a diameter of 1.25 inches (31.75 mm) as disclosed in col. 5, lines 21-36. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a diameter of the diaphragm of Tack, modified by Takeuchi et al., by a diaphragm with a diameter of 1.25 inches as taught by Hsieh in order to make a desired diaphragm to be used.

#### ***Allowable Subject Matter***

11. Claims 33, 34, 36-38 and 49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

12. Applicant's arguments with respect to claims 26 and 32-49 have been considered but are moot in view of the new ground of rejection.

#### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

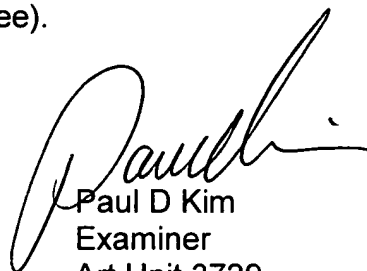
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D. Kim whose telephone number is 571-272-4565. The examiner can normally be reached on Monday-Friday between 6:00 AM to 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul D Kim  
Examiner  
Art Unit 3729